

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|   |  |  |
|---|--|--|
| Applicant's or agent's file reference<br><b>PDS-016-PCT</b> | <b>FOR FURTHER ACTION</b><br><small>see Form PCT/ISA/220 as well as, where applicable, item 5 below.</small> |  |
| International application No.<br><b>PCT/IL2004/000254</b>   | International filing date (day/month/year)<br><b>18/03/2004</b>  | (Earliest) Priority Date (day/month/year)<br><b>26/01/2004</b> |
| Applicant<br><b>POWERDSINE, LTD.</b>                        |  |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any nucleotide and/or amino acid sequences disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☐ Unity of invention is lacking (see Box III).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. 2a

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (January 2004)

BEST AVAILABLE COPY

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IL2004/000254

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H04L12/10 H02J1/10 H02J1/14

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04L H02J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.    |
|------------|---|--------------------------|
| Y<br>A     | US 6 473 608 B1 (KORCHARZ DROR ET AL)<br>29 October 2002 (2002-10-29)<br>abstract<br>column 5, line 6 - line 28<br>column 13, line 64 - column 14, line 13<br>column 19, line 39 - line 42<br>column 32, line 29 - column 38, line 1<br>column 35, line 13 - column 38, line 1;<br>claims 1,2; figures 1A,15A-19C | 1-7,<br>41-47<br>8-40,49 |
| Y          | US 2003/168913 A1 (KINNARD J R)<br>11 September 2003 (2003-09-11)<br>abstract<br>paragraphs '0018!, '0019!; claims 1,2,4;<br>figure 4<br>-----<br>-/--  | 1-7,<br>41-47            |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

27 September 2004

Date of mailing of the international search report

11/10/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl  
Fax: (+31-70) 340-3016

Authorized officer

Jimenez Hernandez, P

Form PCT/ISA/210 (second sheet) (January 2004)

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IL2004/000254

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
|--|--|-----------------------|
| Category *   | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
| A  | US 2001/024109 A1 (SOBKOW MARK ET AL)<br>27 September 2001 (2001-09-27)<br>abstract<br>paragraph '0003! - paragraph '0007!;<br>claims 1-3; figure 1<br>column 11, line 5 - column 11, line 17;<br>claims 1,2,4; figures 1,6A | 41,42                 |
| A  | US 6 438 007 B1 (WILDRICK CARL M ET AL)<br>20 August 2002 (2002-08-20)<br>the whole document   | 41,42                 |
| A  | US 6 125 448 A (SCHWAN MARTIN A K ET AL)<br>26 September 2000 (2000-09-26)<br>the whole document   | 1-49                  |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IL2004/000254

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)  | Publication<br>date        |
|---|---------------------|-----------------------------|----------------------------|
| US 6473608                                | B1                  | 29-10-2002                  | US 6643566 B1 04-11-2003   |
|   |                     | AU 763004 B2 10-07-2003     |                            |
|   |                     | AU 1678500 A 01-08-2000     |                            |
|   |                     | CA 2363831 A1 20-07-2000    |                            |
|   |                     | CN 1333963 T 30-01-2002     |                            |
|   |                     | EP 1145494 A2 17-10-2001    |                            |
|   |                     | WO 0041496 A2 20-07-2000    |                            |
|   |                     | JP 2002534937 T 15-10-2002  |                            |
|   |                     | NZ 513486 A 30-06-2003      |                            |
|   |                     | US 2003036819 A1 20-02-2003 |                            |
|   |                     | US 2002191553 A1 19-12-2002 |                            |
|   |                     | US 2003099076 A1 29-05-2003 |                            |
|   |                     | US 2004037300 A1 26-02-2004 |                            |
|   |                     | US 2004049321 A1 11-03-2004 |                            |
|   |                     | US 2004095933 A1 20-05-2004 |                            |
|   |                     | US 2004095917 A1 20-05-2004 |                            |
|   |                     | ZA 200106533 A 08-08-2002   |                            |
| US 2003168913                             | A1                  | 11-09-2003                  | GB 2390238 A ,B 31-12-2003 |
| US 2001024109                             | A1                  | 27-09-2001                  | NONE                       |
| US 6438007                                | B1                  | 20-08-2002                  | NONE                       |
| US 6125448                                | A                   | 26-09-2000                  | US 6243818 B1 05-06-2001   |

Form PCT/ISA/210 (patent family annex) (January 2004)

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

# PCT

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)**

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/IL2004/000254

International filing date (day/month/year)  
18.03.2004

Priority date (day/month/year)  
26.01.2004

International Patent Classification (IPC) or both national classification and IPC  
H04L12/10, H02J1/10, H02J1/14

Applicant  
POWERDSINE, LTD.

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Jimenez Hernandez, P  
Telephone No. +49 89 2399-7938



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IL2004/000254

---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IL2004/000254

---

**Box No. II Priority**

---

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

---

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

---

1. Statement

|                               |             |           |
|-------------------------------|-------------|-----------|
| Novelty (N)                   | Yes: Claims | 1-49      |
|                               | No: Claims  |           |
| Inventive step (IS)           | Yes: Claims | 8-40,49   |
|                               | No: Claims  | 1-7,41-48 |
| Industrial applicability (IA) | Yes: Claims | 1-49      |
|                               | No: Claims  |           |

2. Citations and explanations

**see separate sheet**

---

**Box No. VII Certain defects in the international application**

---

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

---

**Box No. VIII Certain observations on the international application**

---

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IL2004/000254

**Re Item V**

**Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US-B-6 473 6081 (KORCHARZ DROR ET AL) 29 October 2002 (2002-10-29)

D2: US 2003/168913 A1 (KINNARD J R) 11 September 2003 (2003-09-11)

D3: US 2001/024109 A1 (SOBKOW MARK ET AL) 27 September 2001 (2001-09-27)

D4: US-B-6 438 0071 (WILDRICK CARL M ET AL) 20 August 2002 (2002-08-20)

2. The subject-matter of claim 41, which is the broadest claim, does not involve an inventive step as far as it can be interpreted, see also Item VIII. Claim 41 therefore does not meet the requirements of Art. 33 (3) PCT:

- 2.1 Closest prior art document D1 discloses, in the terminology of claim 1, a method of supplying additional power to a module [having a load therein] having an internal power supply (abstract), the method comprising:

supplying a first power to the load [by the internal power supply] (col. 31, lines 58-61, fig. 15, 2512); and

supplying a variable current limited power to said load (col. 31, lines 52-55, fig. 15, 2506, col. 13, lines 64-67, claim 2),

whereby said variable current limited power is fed to said load and said [first] power is fed [by said internal power supply] (fig. 15).

- 2.2 Claim 1 differs from D1 only in that the power needs of the load are in excess of the power supplied by the current limited power source, so that power is supplied to the load in parallel by the two power supplies.

- 2.3 The objective problem starting from D1 is how to supply power to modules whose power needs exceed, either temporarily or not, the capability of their internal power supply when the internal power supply still can supply some power. The normal case accounted for in the disclosure of D1 is the use of the external



power when the internal power supply becomes fully disrupted. However, D1 also acknowledges implicitly the problem of combining power in parallel from these two power sources, since it teaches how to provide **"at least some operating power"** to modules, which hints at that direction (abstract). Therefore, should some but insufficient internal power be available, it is a straightforward measure for the skilled person, starting from D1, to operate both power sources in parallel, e.g. following the teachings of D2, abstract, Fig. 4, thus arriving at the subject-matter of D1.

3. The subject-matter of claim 1 does not involve an inventive step as far as it can be interpreted, see also Item VIII. Claim 1 therefore does not meet the requirements of Art. 33 (3) PCT:

Claim 1 claims a system corresponding to the method in claim 41 and further adding the use of a controller whose output varies the current limit of the variable current limited power supply. Since this feature is known from D1 (see col. 5, lines 10-28, col. 36, lines 45-49, claim 2, fig. 19c), the reasoning in the previous point also applies to the subject-matter of claim 1.

4. The subject-matter of claim 43 does not involve an inventive step as far as it can be interpreted, see also Item VIII. Claim 43 therefore does not meet the requirements of Art. 33 (3) PCT:

Claim 43 only adds some common variation features to the system defined in claim 1: the use of boost converters and the provision of equal voltage output by the first (external) power supply in the case of failure of the second (internal) power supply. In particular, the aspect of internal power supply failure and backup functionality over the external power supply is well documented in D1. Therefore, these are all either already disclosed/easily derivable features from the disclosure of closest prior art document D1 or common measures that the skilled person would apply when following the teachings of D1, thus not deserving any inventive skills. The reasoning in point 2 also applies to claim 43.

5. The additional features of the dependent claims 2-7, 42, 44-48 do not add anything inventive to the independent claims because these features are either known from the prior art (varying the current limit in claim 42: see citations in point 3) or common measures or variations (Article 33(3) PCT).

6. The subject-matter of claims 18 meets the requirements of novelty and inventive step (Art. 33(1)-(3) PCT):
- 6.1 Claim 1 relates to a system for supplying additional power to a module having an internal power supply. D1 also discloses a system of the same type, see point 2.
- 6.2 Claim 1 is distinguished from D1 in that the current limited power source and the associated (internal) power source operate in parallel and in that the current limited power source is responsive to an input from a controller to vary the current limit of the power source, whereby the controller varies the current limit in response to information regarding at least one of said load and said power supply associated with said load.
- 6.3 The objective problem starting from D1 is how to supply power to modules whose power needs exceed the capability of their internal power supply when their internal power supply is operative without having to re-engineer the existing internal power supply modules. This problem is solved by the distinguishing features in the previous point.
- 6.4 None of remaining documents cited in the Search Report disclose or suggest such a solution. Therefore an inventive step must be acknowledged.
7. The subject-matter of claims 34 meets the requirements of novelty and inventive step (Art. 33(1)-(3) PCT):
- Claim 34 claims a method corresponding to the system in claim 18, whose apparatus features are characterised by carrying out the method steps in claim 34. Therefore, the reasoning in point 6 also applies to claim 34.

**Re Item VII**

**Certain defects in the international application**

1. The claims do not contain reference signs in parentheses, Rule 6.2(b) PCT.
2. The independent claims are not in the two-part form vis-à-vis D1, Rule 6.3(b) PCT.

3. **D1-D4** are not mentioned in the description, Rule 5.1(a)(ii) PCT. D3 and D4 are also considered to be very relevant to the subject-matter of the application.
4. The phrase "**incorporated by reference in their entirety**" on page 1 should be deleted as the application should be self-contained; such referenced documents are not regarded as part of the disclosure unless they contain matter essential to the invention, in which case the subject-matter in question would have to be incorporated into the description. This however is not the case here (see PCT International Preliminary Examination Guidelines II-4.17).

**Re Item VIII.**

**Certain observations on the International application (Art. 6 PCT, clarity)**

1. The independent claims are not allowable due to severe lack of clarity issues:
  - 1.1 Claim 1 claims "a system for supplying additional power to a module", ie a first system arranged for or suitable to interact (provide power) with a second system. However, the features defined to be comprised in this system also include the module itself, eg. the first system arranged for or suitable to interact with a second system in lines 4,5 is at the same time defined to comprise the second system in its definition. This causes a severe lack of clarity and consistency in the definition of the subject-matter and of the scope of protection. The same applies to claim 18.
  - 1.2 The expression "not being designed to accommodate power sharing" in claim 1, lines 6, 7 and "not designed to accommodate power sharing" in claim 34 are not clear since they try to define some ambiguous technical feature as a disclaimer definition. The module is indeed defined in the claims so as to accommodate power sharing, so that this disclaimer definition only causes uncertainty as to the technical features meant by it and does not have a restrictive effect, i.e. it does not limit the scope of protection.
  - 1.3 The expressions "variable current limited power source" and "variable current limited power supply" in the independent claims are unclear.
  - 1.4 Method claim 34 is defined by pseudo-method steps which are not clear regarding category: eg "supplying a load", "supplying a power supply", etc. which are

structural (apparatus) features rather than method steps.

- 1.5 The term "first power" in claim 41, lines 9 and 13 is unclear: on line 9, it seems to relate to power in the sense of electrical energy. On line 9, even if formally referring to the antecedent, this expression seems to relate to a power supply or power source apparatus entity.

Furthermore, the location and scope of the term "module" in this claim is also unclear (what parts does it comprise? how does it relate to the other parts and/or method steps?).

2. The claims should have defined the relevant subject-matter in terms of a single independent claim in each category followed by dependent claims covering features which are merely optional (conciseness, Art. 6 PCT and Rule 6.4 PCT). Although claims 1, 18 and 43 in the apparatus category and claims 34 and 41 in the method category have been drafted as separate independent claims, they appear to be easily re-draftable as a single independent claim in each category with additional dependent claims. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection. A single independent claim in each category appears in this case appropriate.

Furthermore, the claims are not concise since in some cases the same subject-matter is substantially defined by both an independent claim and certain dependent claim depending on a broader independent claim.

Hence, claims 1, 18, 34, 41 and 43 do not meet the requirements of Article 6 PCT.

3. The drawing sheets relating to Fig. 5a, 5b, 5c, 5d and 6 referred to in the description are missing. The application should have been adapted accordingly.

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**